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Shi et al.

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(54) **TOWER SUPPORT STRUCTURE**

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E02D 27/02	(2006.01)
E02D 27/08	(2006.01)
E02D 27/26	(2006.01)

(52) **U.S. Cl.**

CPC ***E02D 27/42*** (2013.01); ***E02D 27/02*** (2013.01); ***E02D 27/08*** (2013.01); ***E02D 27/26*** (2013.01)

(58) **Field of Classification Search**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,309,041	A	7/1940	Booker et al.	
3,328,921	A	6/1964	Keslin	
4,930,753	A *	6/1990	Alvyn	E04B 1/6158 16/262
5,499,885	A *	3/1996	Chapman	E02D 27/42 403/297
5,531,419	A *	7/1996	Gustafsson	E04H 12/187 248/519
6,925,957	B2	8/2005	Schultz	
6,982,680	B2	1/2006	Janoschka et al.	
7,017,509	B2	3/2006	Schultz	
8,240,051	B2	8/2012	Fedock et al.	
8,245,258	B2	8/2012	Park et al.	
8,439,166	B2	5/2013	Kreller	
8,516,774	B2	8/2013	Zavitz et al.	
8,919,051	B1	12/2014	Echemendia et al.	
9,328,861	B2	5/2016	Johnson et al.	
9,428,877	B2	8/2016	Clifton	
2004/0233120	A1 *	11/2004	Ryan	E04H 5/02 343/878
2011/0061321	A1 *	3/2011	Phuly	E02D 27/42 52/297

(Continued)

FOREIGN PATENT DOCUMENTS

BR	WO 2015061862 A1 *	5/2015	E02D 27/42
FR	2856716 A1 *	12/2004	E04H 12/2238

(Continued)

OTHER PUBLICATIONS

Letter from Westman Champlin & Koehler Regarding alleged Infringment of ARE Telecom Incorporated's Intellectual Property, dated Apr. 28, 2015, 2 pages.

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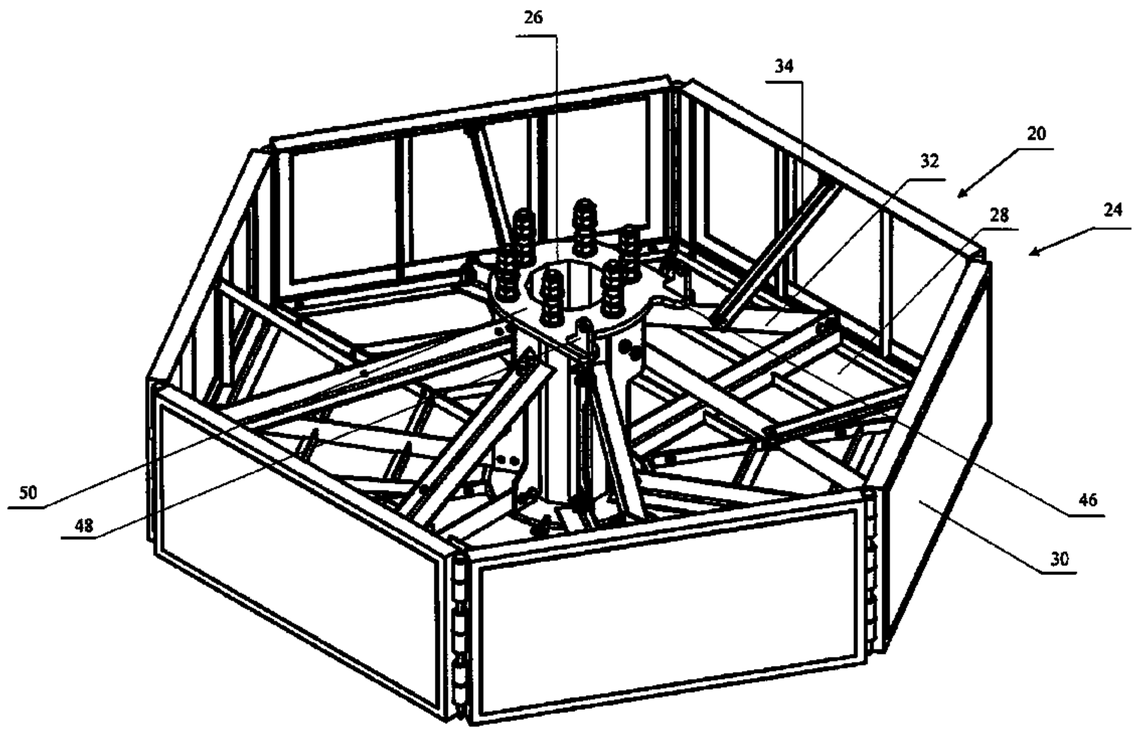
(57) **ABSTRACT**

A foundation for a tower, the foundation including a main pedestal support structured to engage to a base of the tower. A floor structure surrounds and is secured to the main pedestal support. A wall structure surrounds the floor structure proximate a perimeter thereof, secured to the perimeter of the floor structure and extending upwardly from the floor structure. The main pedestal support is located generally centrally in the floor structure.

8 Claims, 11 Drawing Sheets



(56) **References Cited**

U.S. PATENT DOCUMENTS

2012/0228442	A1	9/2012	Clifton	
2013/0146739	A1*	6/2013	Zhao	E04H 12/2246 248/519
2015/0197957	A1*	7/2015	Anderson	E04H 12/2246 52/126.5
2015/0308140	A1*	10/2015	Clifton	F03D 9/007 248/346.2
2015/0376857	A1*	12/2015	Clifton	E04H 12/2238 52/292

FOREIGN PATENT DOCUMENTS

NL	1003089	C2 *	11/1997	E04H 12/187
WO	WO 2014/182870	A1	11/2014	

* cited by examiner

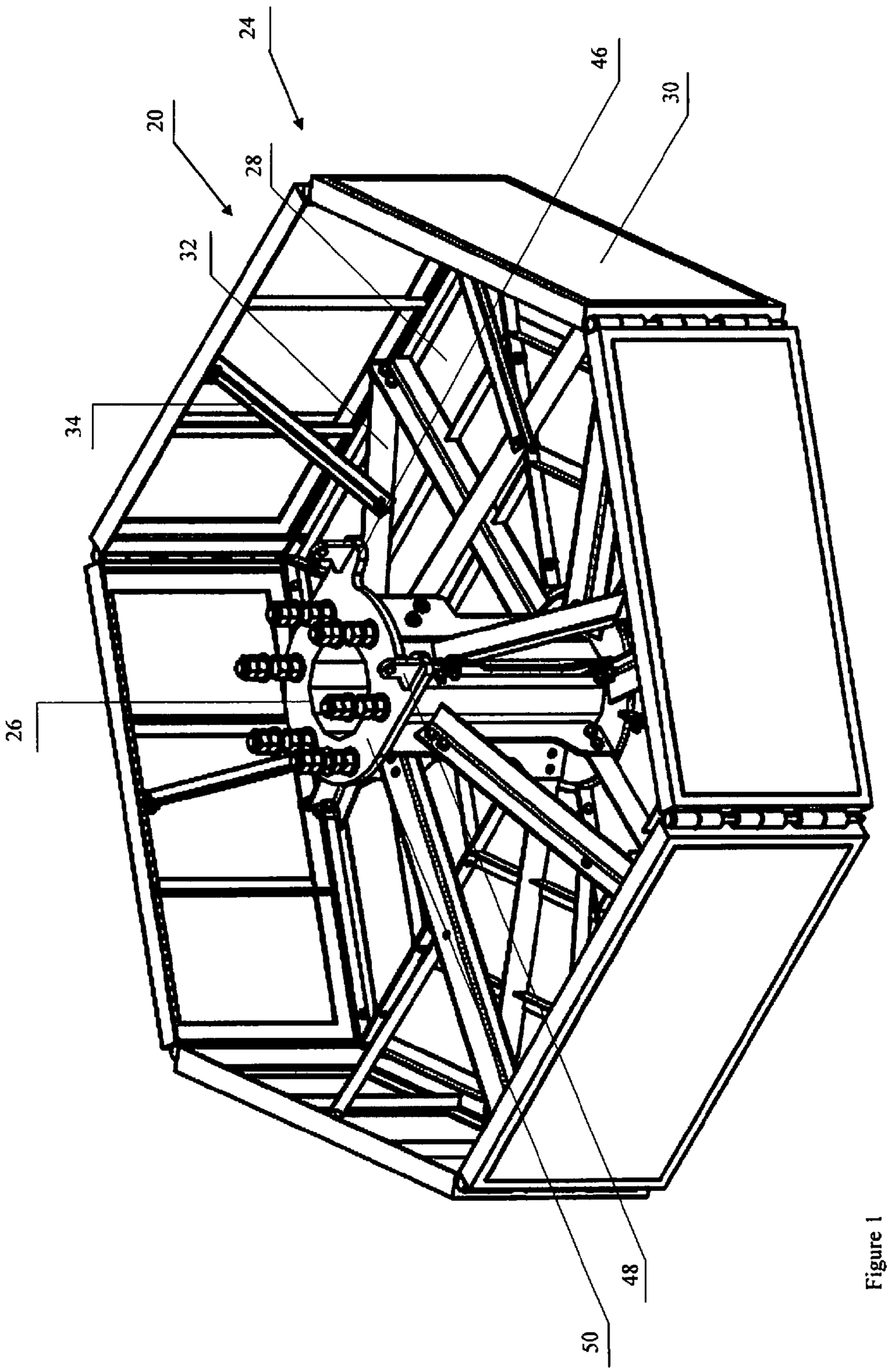


Figure 1

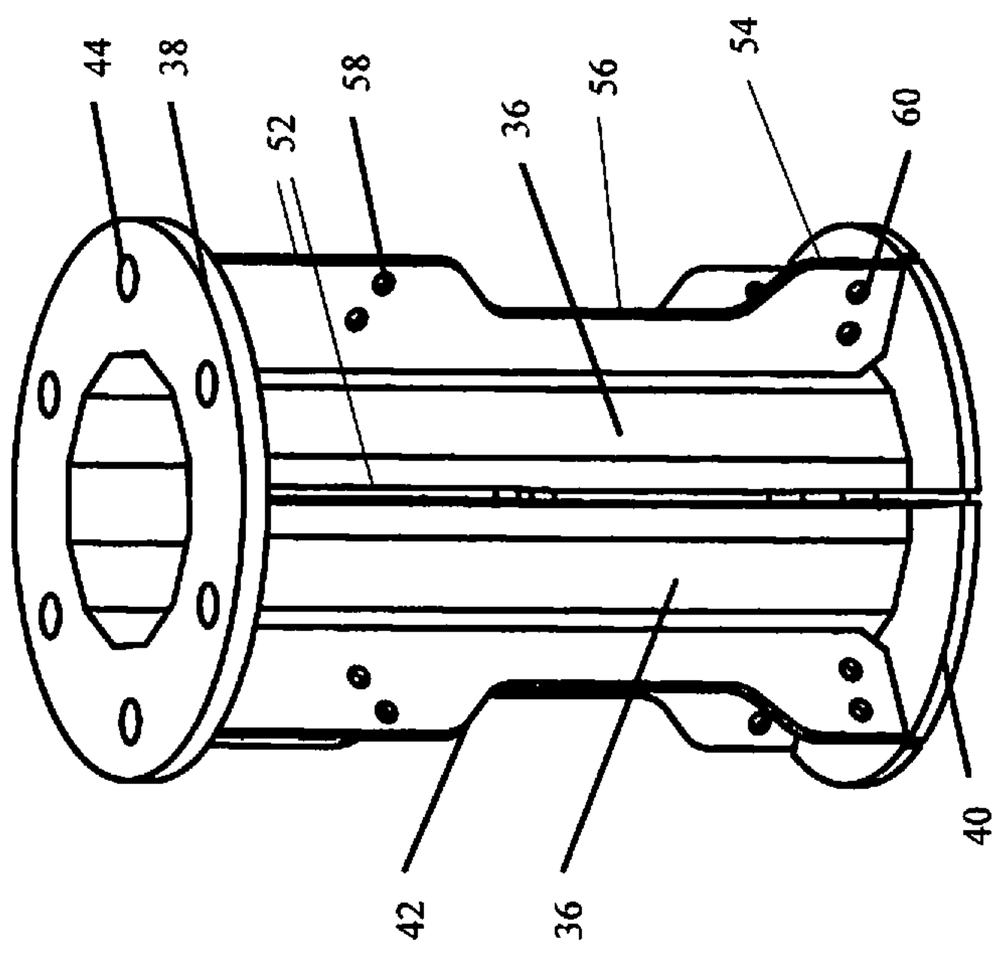
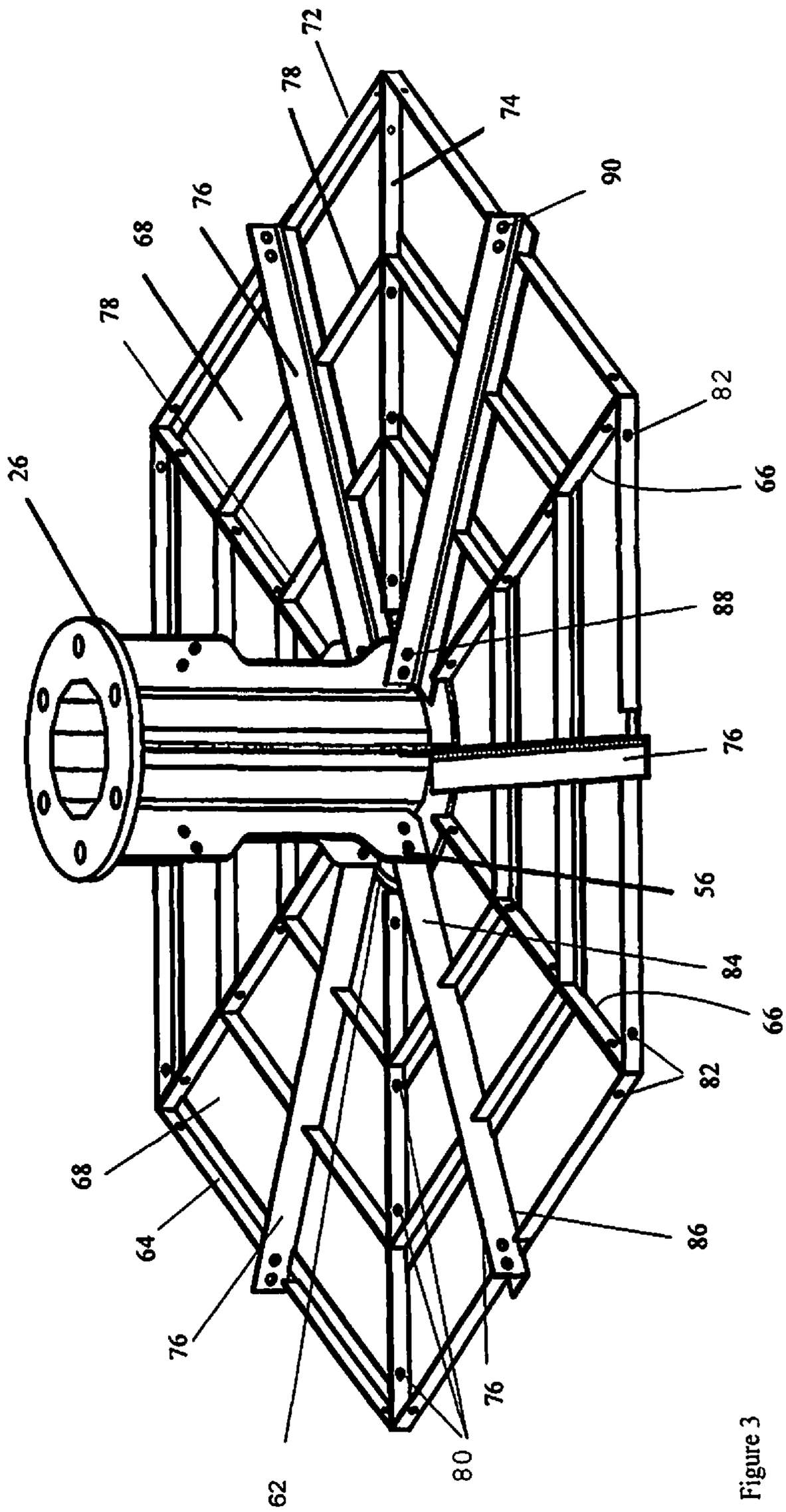


Figure 2



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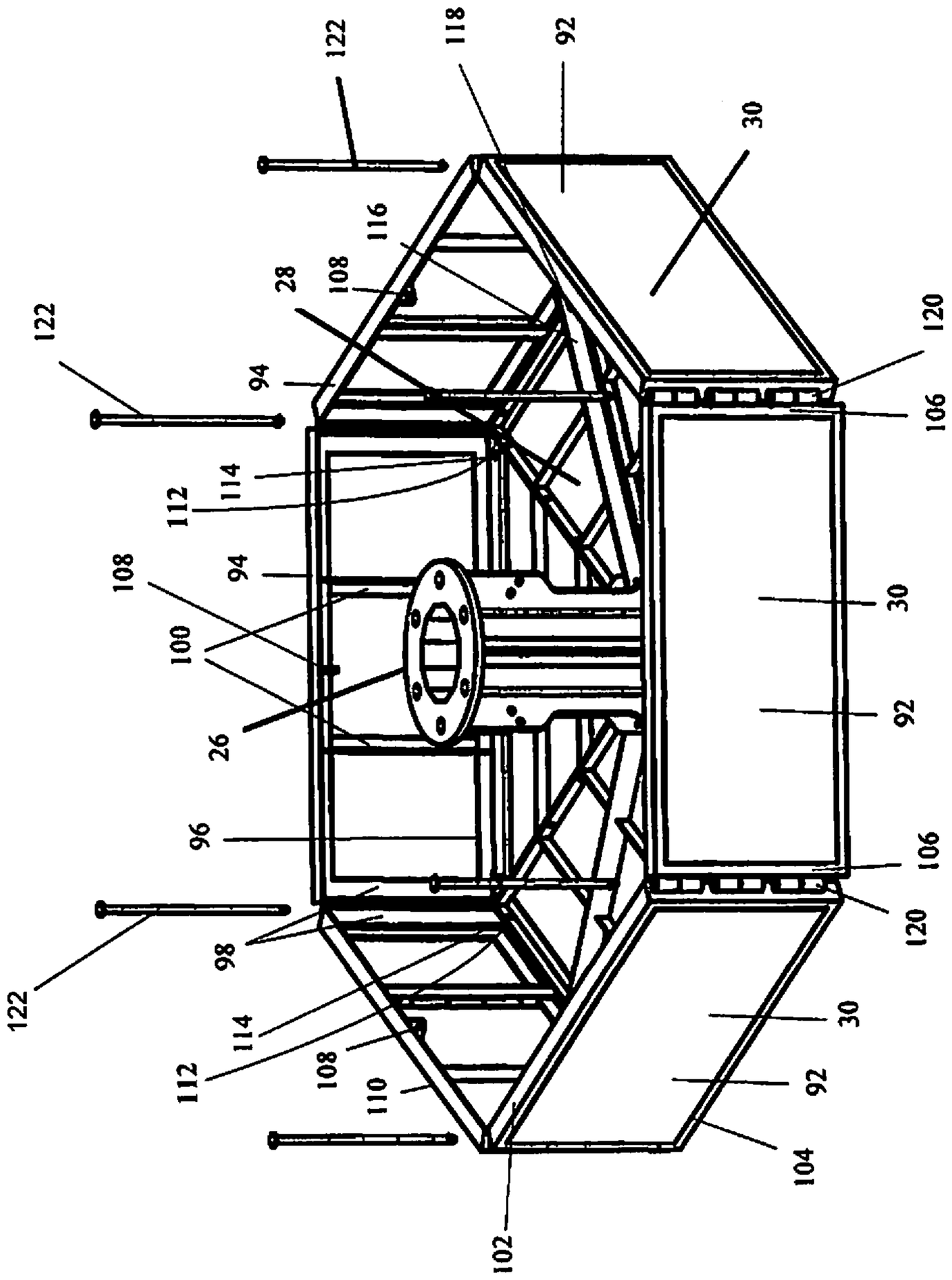
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Figure 4

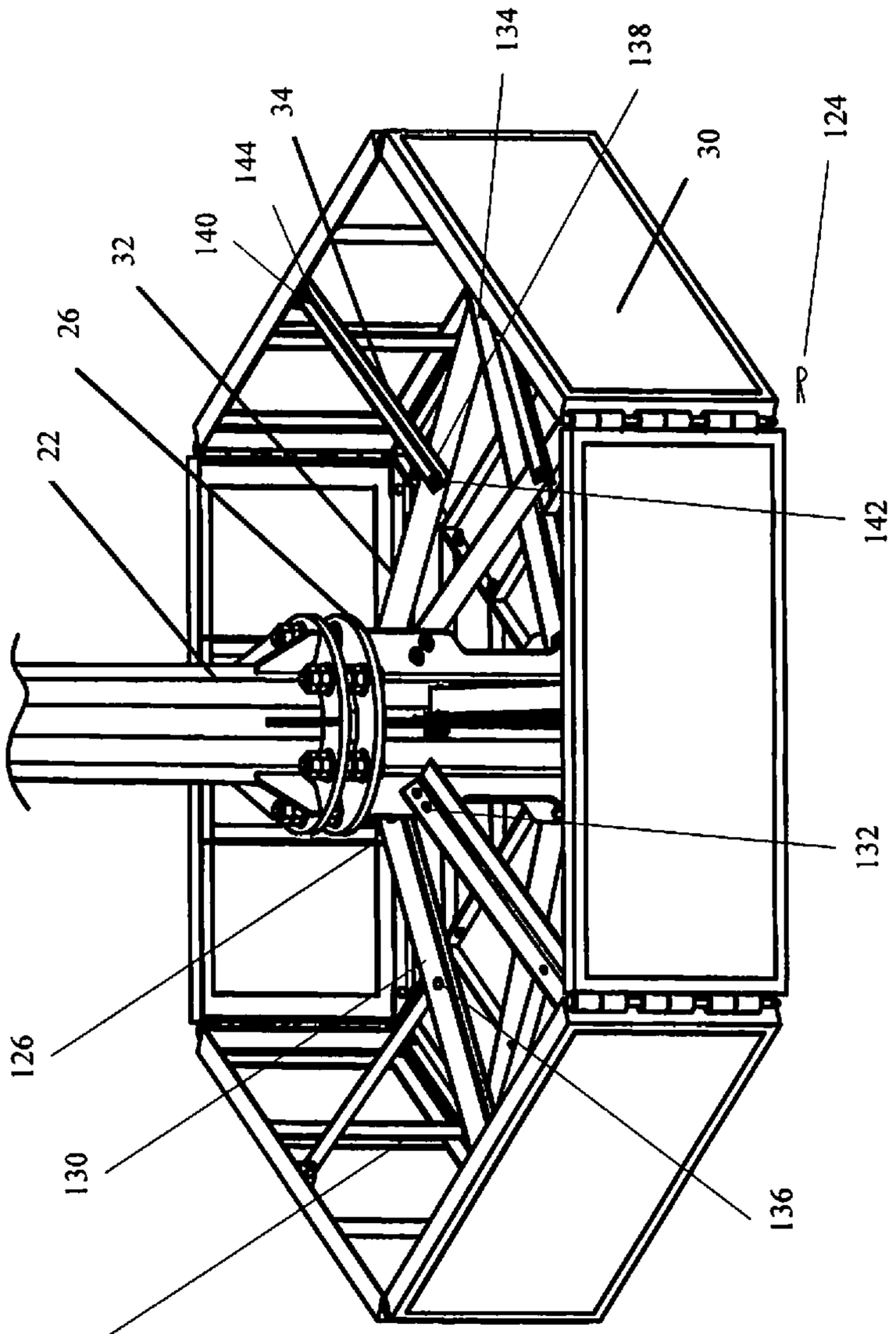


Figure 5

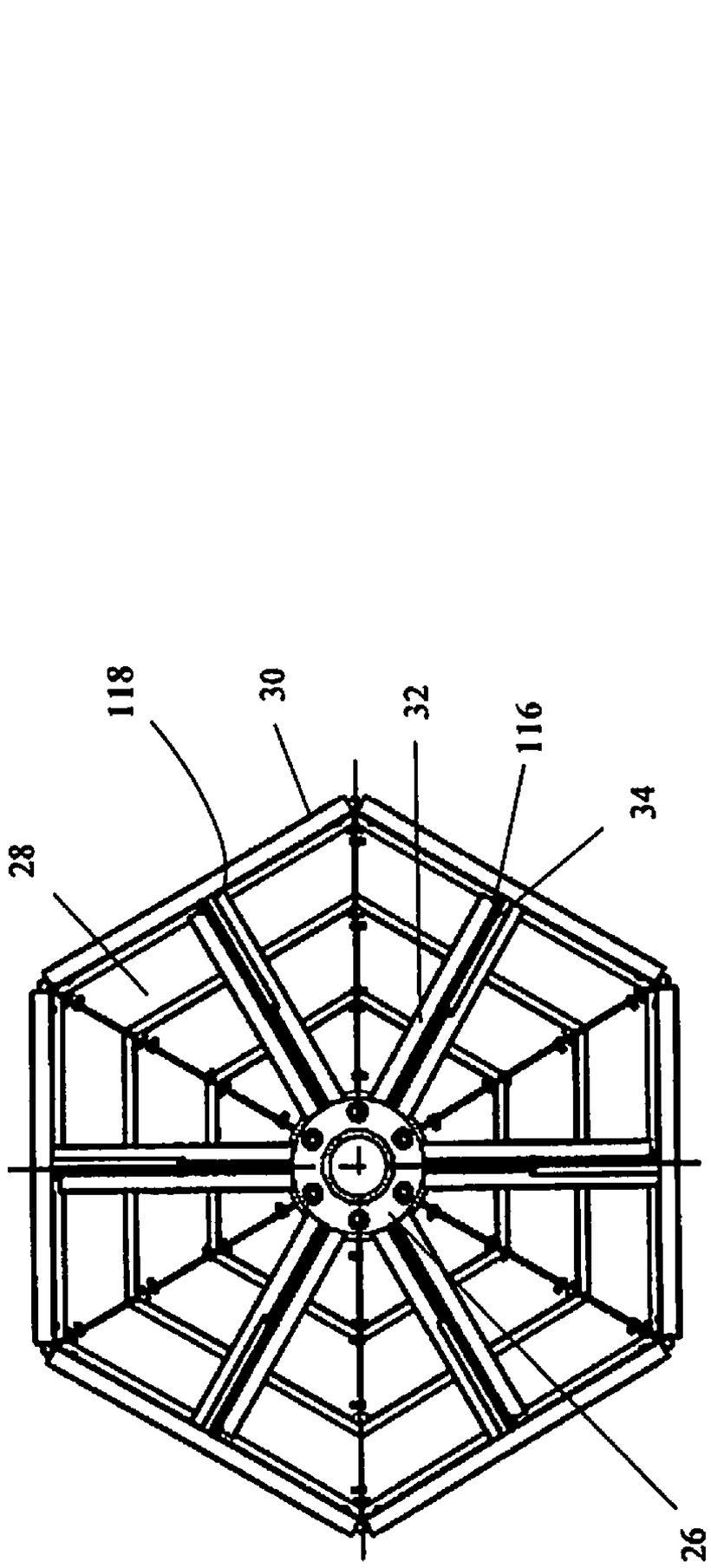
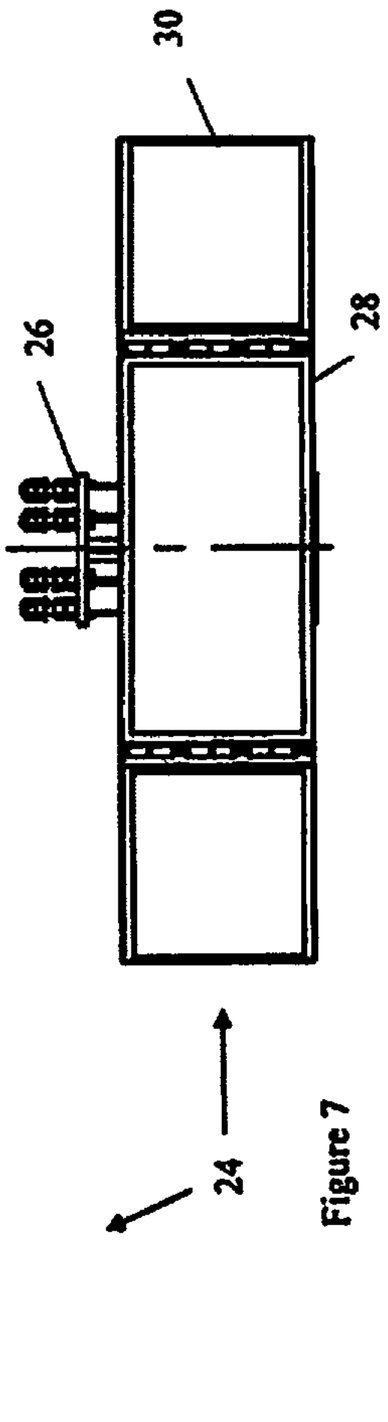


Figure 6



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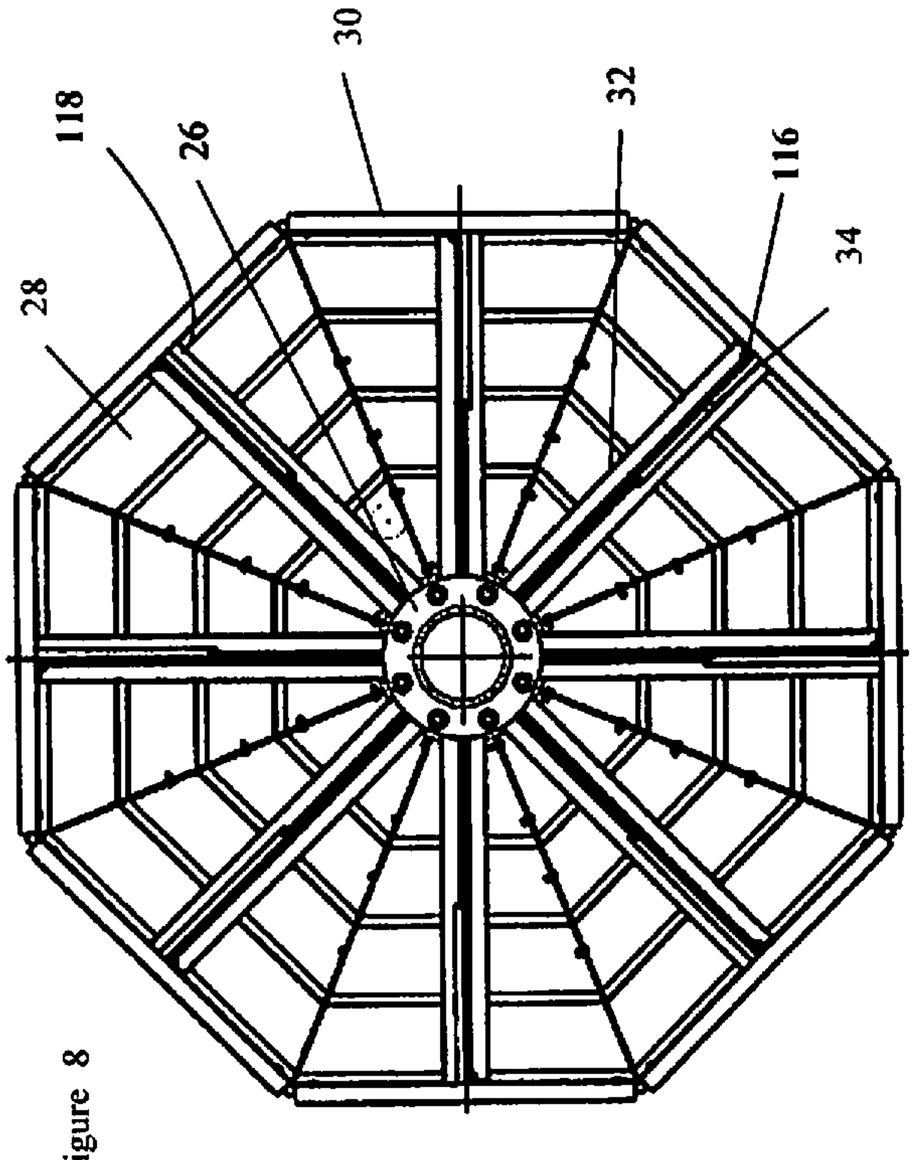

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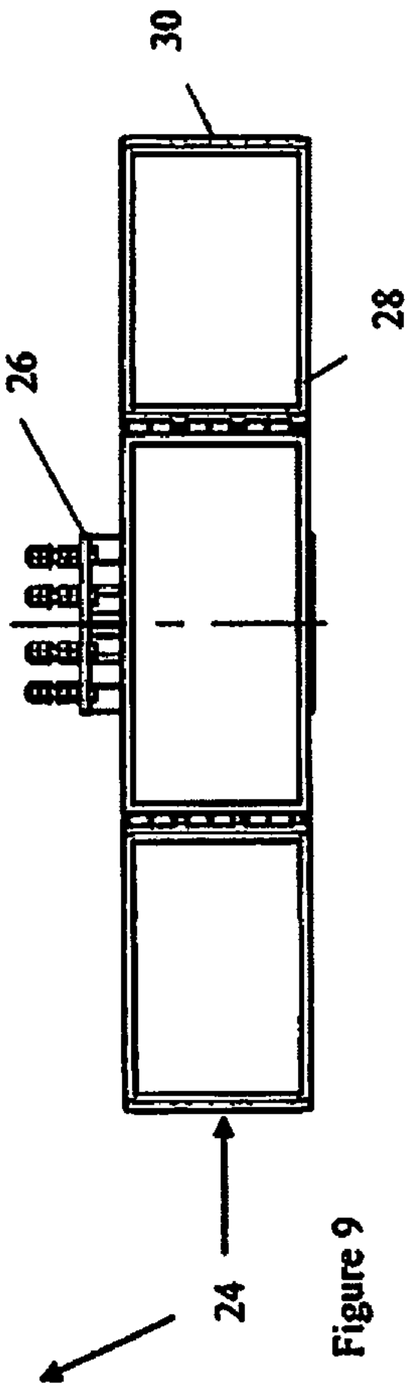

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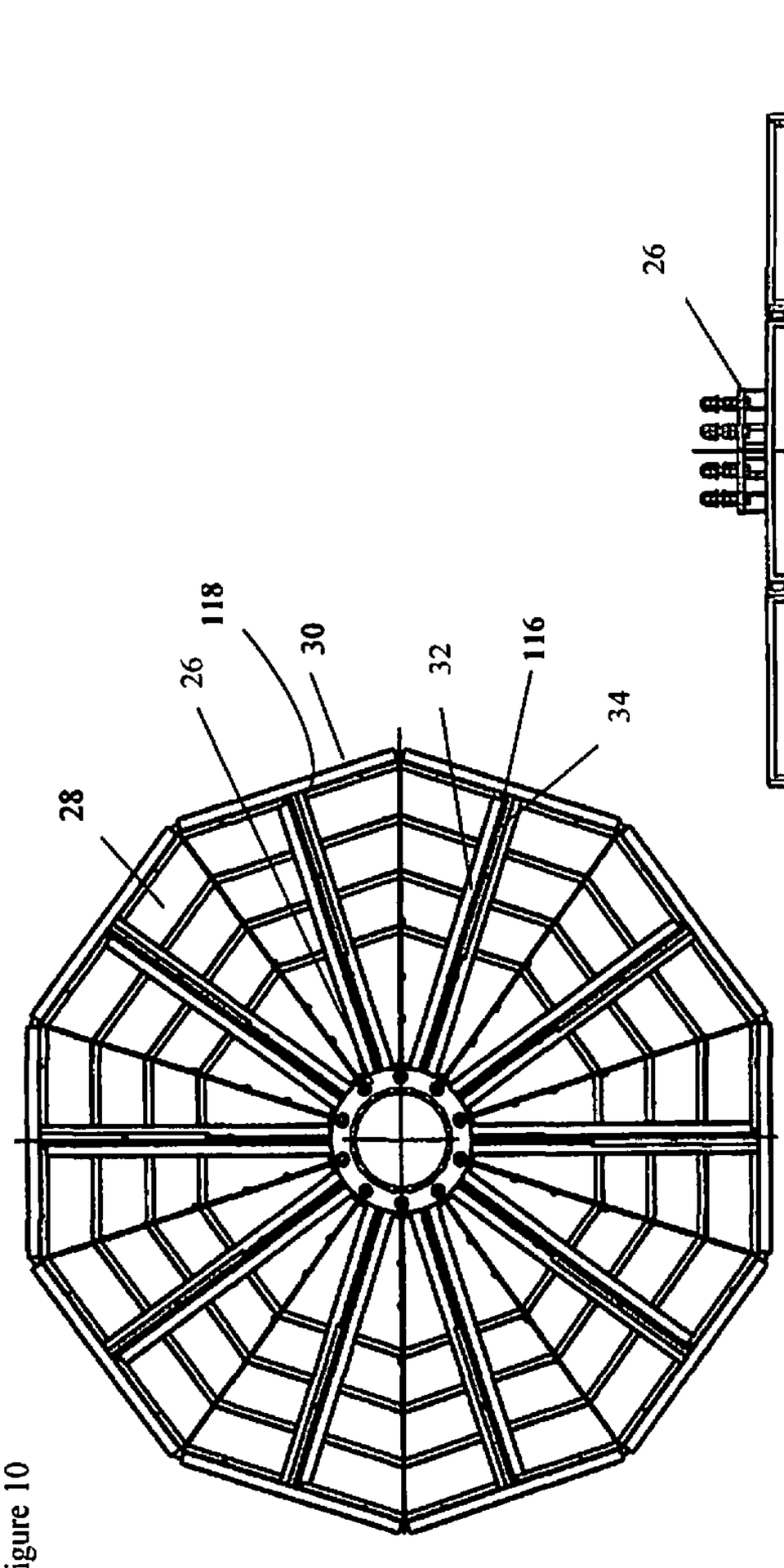

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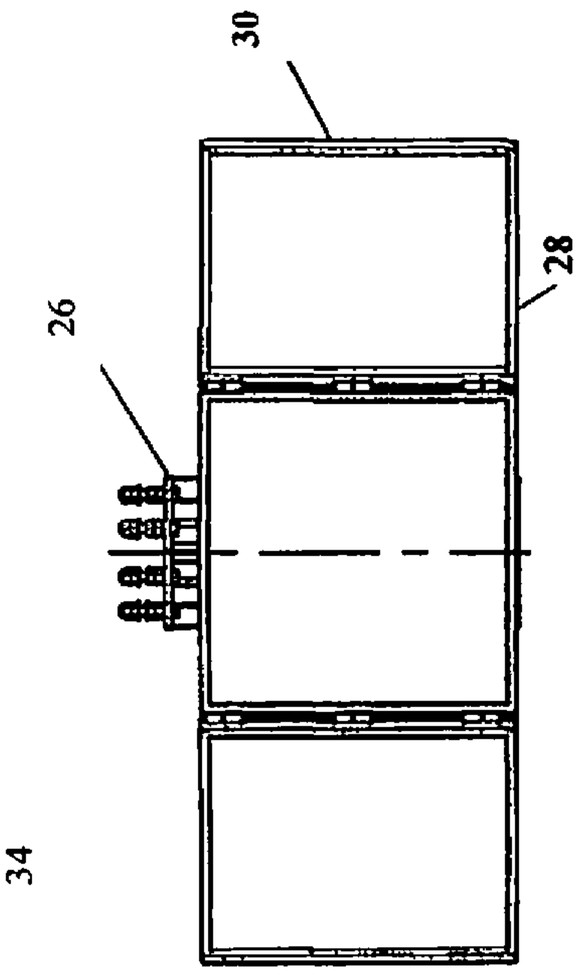

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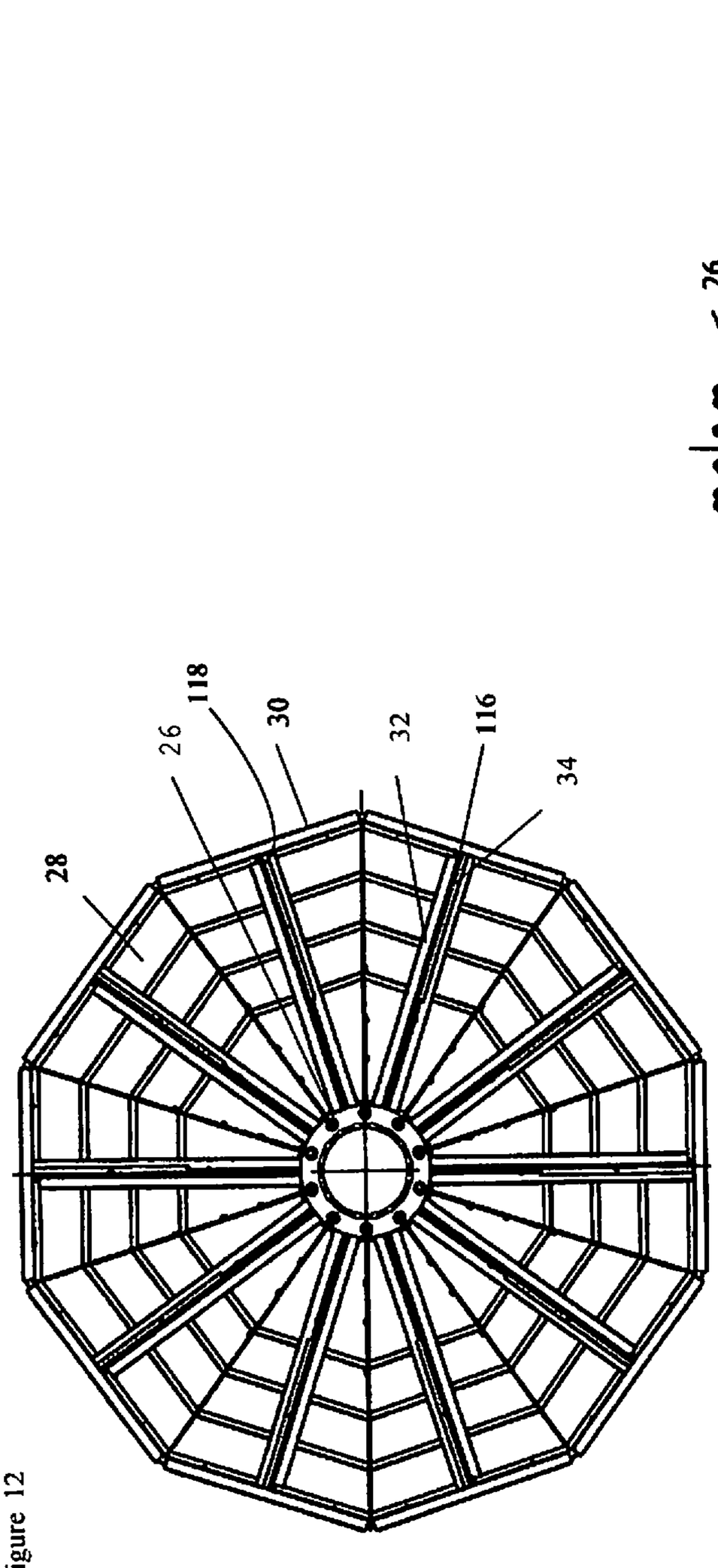

Figure 12

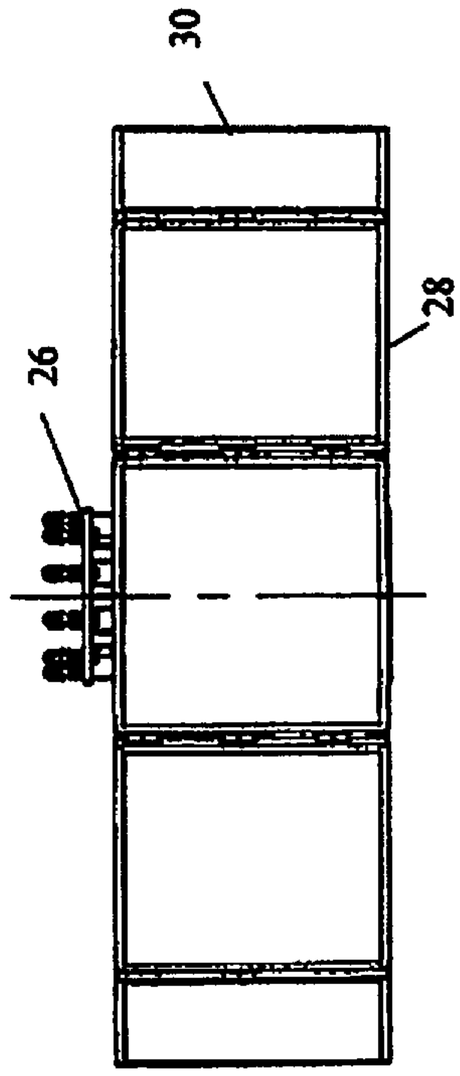

Figure 13

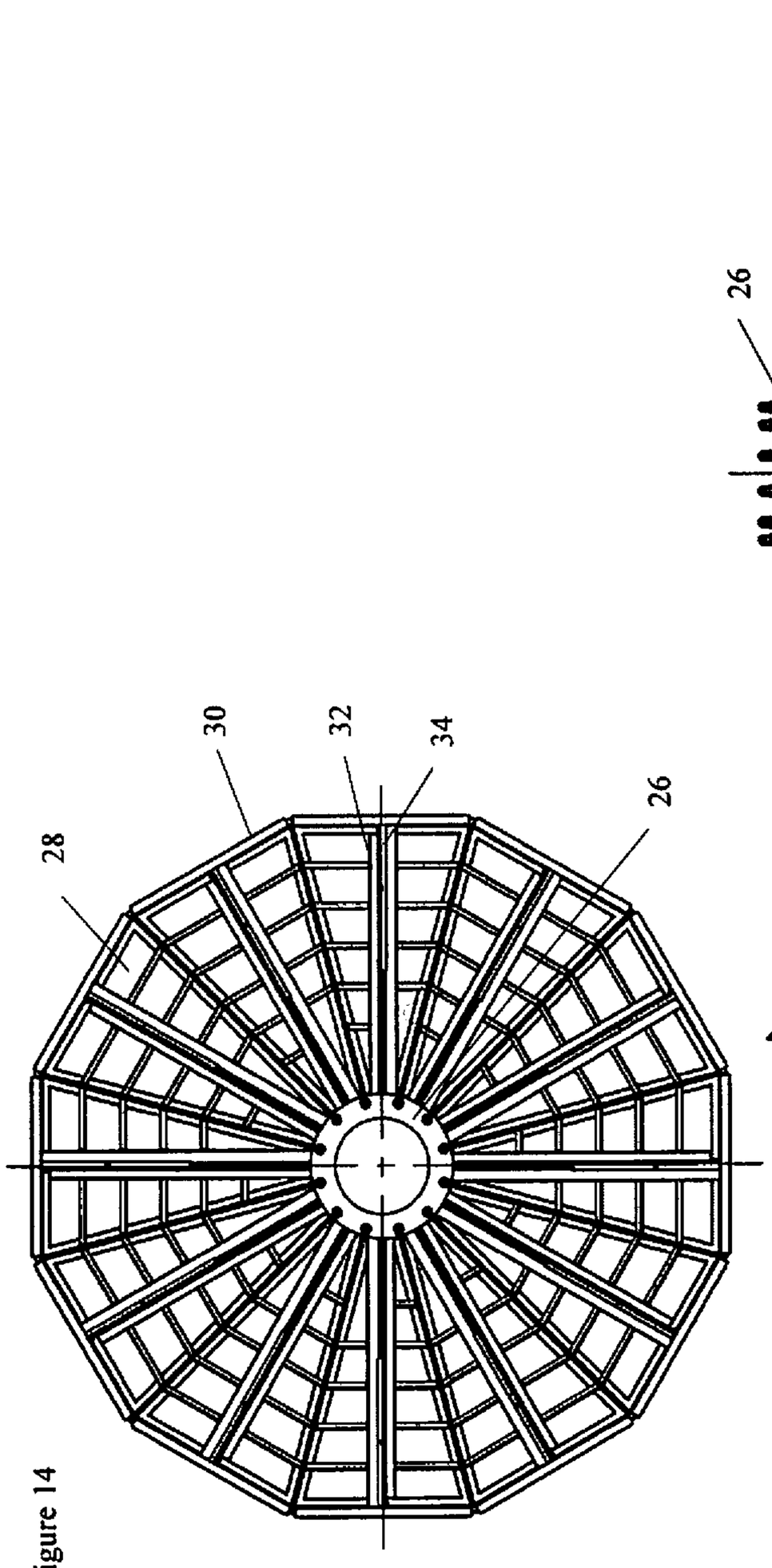

Figure 14

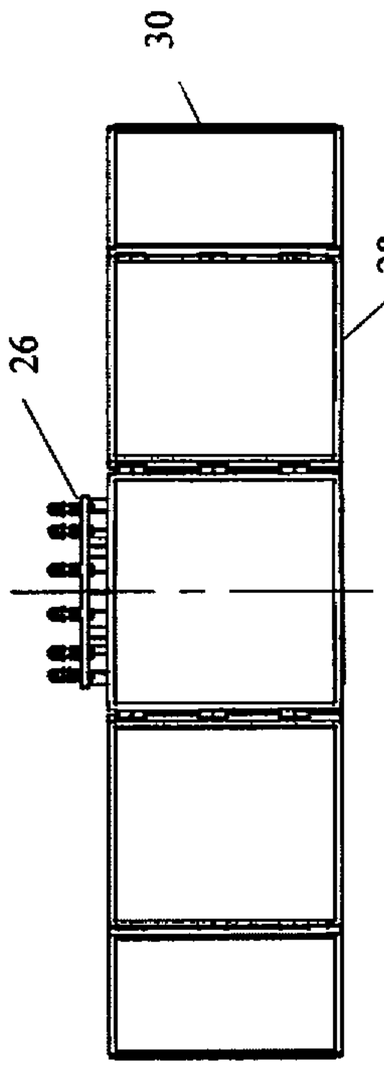

Figure 15

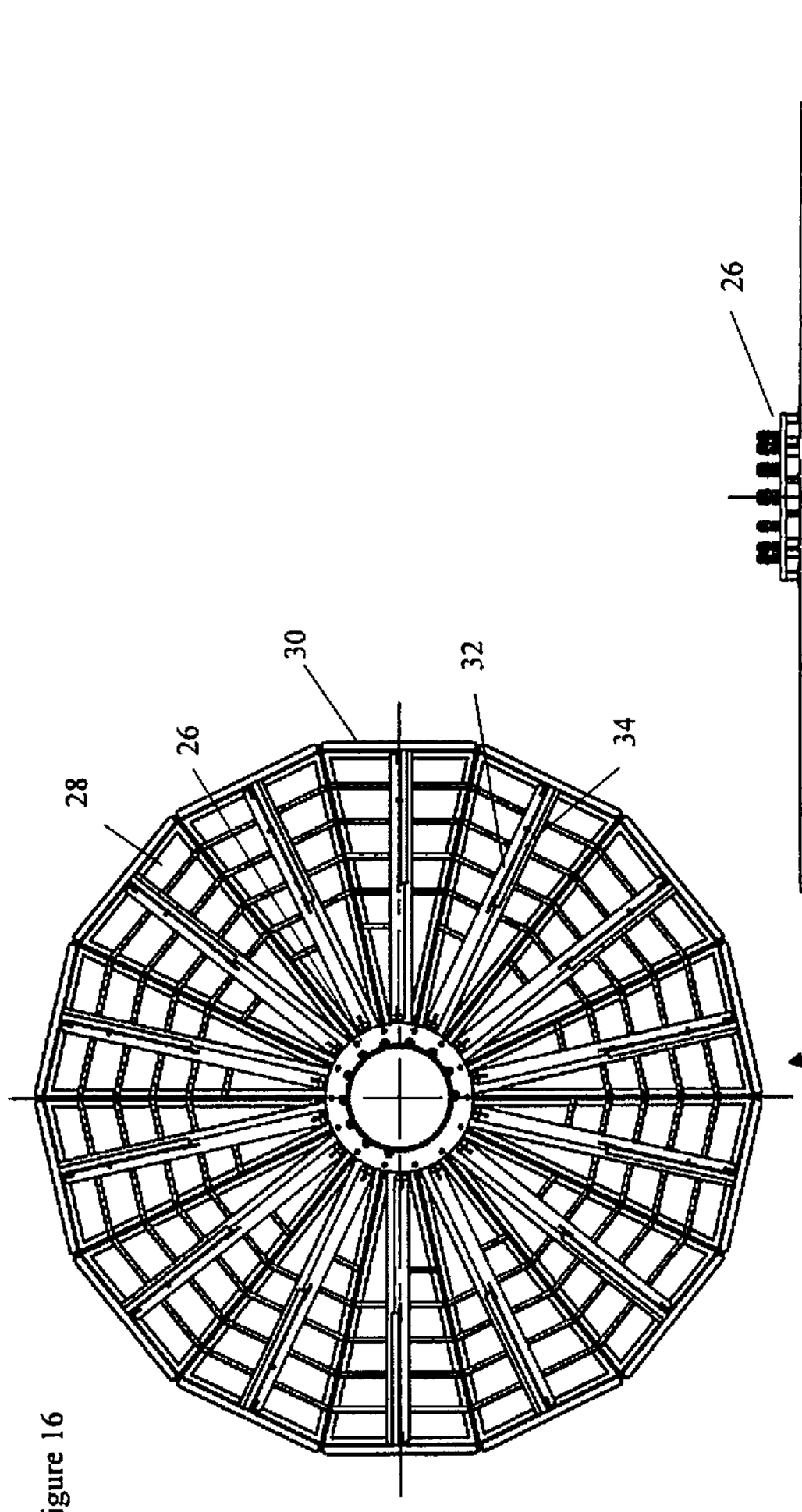

Figure 16

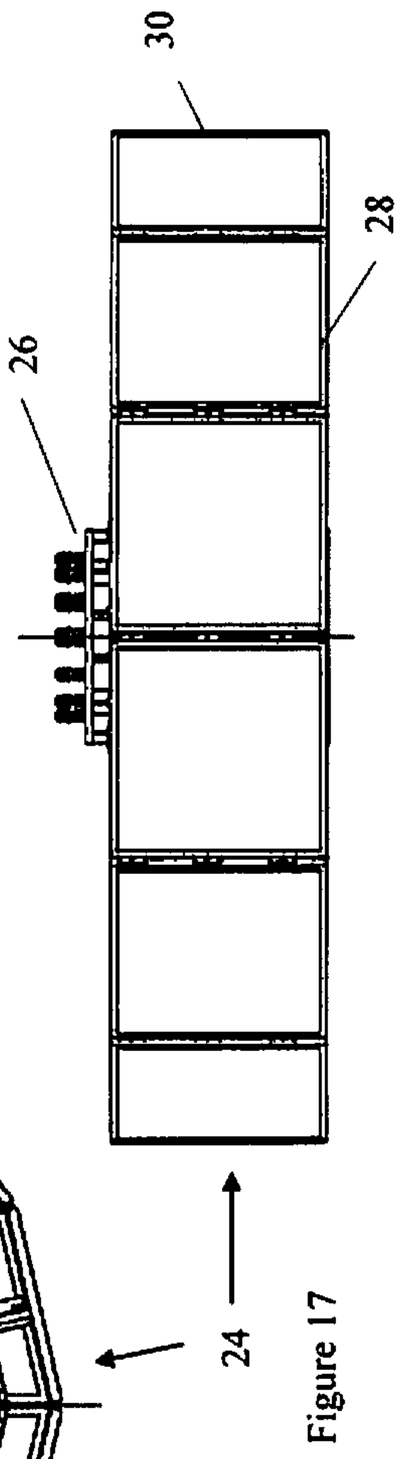

Figure 17

TOWER SUPPORT STRUCTURE

FIELD OF THE INVENTION

The invention generally relates to towers such as communication towers, wind power towers and lighting towers. More particularly, the invention relates to a foundation or support structure for a tower.

BACKGROUND OF THE INVENTION

Towers or other vertical supports are utilized to support many structures such as cell phone antennas, other broadcast antennas, lights, wind power turbines and many other appliances. Towers of any significant height and bearing any significant load must be attached to some form of foundation to keep the tower upright and to resist the forces of wind and weather.

In construction engineering, foundations and foundation designs can vary but commonly use poured concrete and reinforcing rods or reinforcing bars to form a heavy integral structure that is either buried or placed on the ground to support a structure such as a tower. However, the use of concrete foundations is not always convenient or even feasible.

In many of these cases, the use of a concrete foundation is not practical because of limited availability of concrete, long concrete casting and curing times, or the fact that concrete construction creates a large amount of construction waste. For example, materials used for concrete forms often cannot be reused and must be discarded.

Accordingly, there is still room for improvement in the arts related to tower installation and tower foundations.

SUMMARY OF THE INVENTION

The present invention solves many of the above discussed problems by providing a structure that can be fully assembled and disassembled in a short period of time and that permits the utilization of local materials to provide ballast. The foundation structure of the present invention eliminates many of the issues typical to a standard foundation utilized for support structures such as communications towers.

Recent trends have demonstrated a need for temporary, quick to assemble and disassemble foundation on which to mount a tower. A need has also been recognized for a foundation having reduced environmental impact.

For example, after major natural disasters, such as earthquakes, typhoons, tornadoes and tsunamis, there is often a need to rapidly construct temporary structures for lighting, telecommunications and/or security applications. Often, it is necessary to locate these towers or structures in remote locations. Remote locations often have limited accessibility and complex or unfavorable terrain that may make it difficult to transport concrete to a foundation site. Further, the distance from a ready mix concrete plant may make it prohibitively expensive or prohibitively difficult to transport concrete to the construction site.

Even without considering natural disasters or other emergency needs to provide foundations for tower-like structures, growing telecommunications demand has created a need to construct or deploy more tower sites more quickly and thus has created a demand to expedite the process of building a tower site. Wind energy turbine towers are often located far from sources of concrete and may have limited accessibility as well as difficult terrain.

According to an example embodiment of the invention, a tower assembly includes a tower and a base assembly. The tower is generally conventional in structure and will not be described in detail here. The tower may be of a type used to support, for example, cell phone antennas, wind power equipment, lighting or weather monitoring equipment.

The base assembly generally includes a main pedestal support, bottom trays, side support panels, primary support beams and secondary support beams.

The main support pedestal is centrally located within the foundation and includes a vertical cylindrical or polygonal pipe structure having top and bottom plates secured thereto. The top and bottom plates are secured to the cylinder and extend out radially from the top and bottom of the cylinder or polygonal structure. The top plate presents multiple bolt holes typically uniformly spaced around the top plate and located outwardly from the circumference of the cylinder or polygonal tube. The main support pedestal also presents gussets radially disposed around an outer circumference thereof. The gussets are typically evenly spaced around the cylinder or polygonal tube and extend vertically from a top to a bottom of the tubular structure and are bounded by the top plate and the bottom plate.

The bottom trays are secured to the base of the main support pedestal and are arranged generally horizontally around the main support pedestal base. The bottom trays are formed of plates, typically having a polygonal geometry. According to an example embodiment of the invention, the bottom trays are generally trapezoidal in shape having a small end of the trapezoid located centrally and a large end located peripherally. The bottom trays are secured proximate an inner edge thereof to the main support pedestal and proximate an outer edge thereof to the side support panels.

According to an example embodiment of the invention, the side support panels are generally rectangular plate-like structures arranged vertically around an outer circumference of the foundation. The length of each rectangular side support panel is approximately equal to that of the side length of the long side of the bottom trays. The bottom trays are secured to the side support panels. Adjacent side support panels are secured together by a hinge-like connection and a hinge pin thus forming the outer perimeter of the base. The hinge-like connection generally includes mating hinge barrels on the edges of adjacent side support panels. Alternate hinge barrels are secured on each of the mating edges.

According to an example embodiment of the invention, the primary support beams form part of a truss-like support arm. Each primary support beam is secured to the gussets near the top of the main support pedestal. The primary support beams angle downward from near the top of the main support pedestal to the outside of the foundation to be secured with the side support panels and the bottom trays at a juncture thereof.

According to an example embodiment of the invention, a secondary support beam is secured at a first end to approximately the mid-point of the primary support beam and at a second end thereof to a top of a corresponding side support panel.

According to an example embodiment, the base assembly bottom support pallet is formed of the bottom trays. Generally, this forms a regular polygon for example, a regular hexagon assembled from an equal quantity of bottom support trays, side support panels, primary support beams and secondary support beams. In the case of hexagonal assembly, there is six of each of these structures. While the primary example discussed in this application is a hexagonal structure, it should be understood that the invention is not limited

to hexagonal structures. The structures may for example be hexagonal, octagonal, decagonal, dodecagonal or tetradecagonal. That is structures according to the invention may have six, eight, ten twelve or fourteen sides or a larger number of sides depending upon the involvement. Embodiments having an odd number of sides are also contemplated.

According to an example embodiment of the invention, the main support pedestal, bottom trays and bottoms of side support panels are connected together by fasteners such as bolts. According to an example embodiment, the primary support beam extends outwardly along the bottom trays to the respective side support panels and is secured at both the connection between the bottom trays and the side support panels and at the gussets near the main support pedestal. This structural arrangement provides strength and rigidity of the connection between the main support pedestal and the bottom trays.

According to an example embodiment, the primary and secondary support beams may be formed, for example, from galvanized steel angle. The connection between the primary support beam and the foundation may be accomplished by fasteners such as bolts. The bottom trays and side support panels as well as a primary support beam may be secured by a single fastener.

The primary support beam may be secured to the gussets on the main support pedestal near the top flange also by a bolt or other fastener. The bottom side of each side support panel is secured to one of the vertical support bars of a bottom tray and to the other side support panels via a hinge-like connection. A pin is passed through hinge barrels of the hinge-like connection to hold each of the side support panels together with its adjacent side support panel. The pins are secured in place by an R-type stop pin at the bottom.

Once the base assembly is fully assembled it is filled with ballast. Examples of ballast that can be utilized include soil, gravel, bricks, concrete blocks and sand. Of course other ballast material may be used so long as the material is sufficiently dense to stabilize the base assembly. The use of local materials as ballast assists in reducing costs for installation.

Accordingly, a base assembly in accordance with the present invention may be utilized to replace a traditional concrete foundation used for installing self-supporting towers. The base assembly according to the present invention is easy to install, easy to handle and may be assembled and ready for use in a single day. This is a great advantage over concrete foundations which require significant curing times. The base assembly of the present invention may be used in multiple ways including in the ground, above the ground and may utilize many different types of ballast. The base assembly of the present invention can be disassembled and relocated and can be used for both short term and long term deployment.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a base assembly according to an example embodiment of the invention;

FIG. **2** is a perspective view of a main pedestal support according to an example embodiment of the invention;

FIG. **3** is a perspective view of a main pedestal support surrounded by six bottom trays according to an example embodiment of the invention;

FIG. **4** is a partially exploded perspective view of a main pedestal support, bottom trays and side support panels according to an example embodiment of the invention;

FIG. **5** is a perspective view of an assembled base assembly including a tower according to an example embodiment of the invention;

FIG. **6** is a plan view of a hexagonal tower base according to an example embodiment of the invention;

FIG. **7** is an elevational view of the base assembly of FIG. **6**;

FIG. **8** is a plan view of an octagonal base assembly according to an example embodiment of the invention;

FIG. **9** is an elevational view of the base assembly of FIG. **8**;

FIG. **10** is a plan view of an ten sided base assembly according to an example embodiment of the invention;

FIG. **11** is an elevation view of the base assembly of FIG. **10**;

FIG. **12** is a plan view of a ten sided base assembly according to an example embodiment of the invention;

FIG. **13** is an elevational view of the base assembly of FIG. **12**;

FIG. **14** is a plan view of a twelve sided base assembly according to an example embodiment of the invention;

FIG. **15** is an elevational view of the base assembly of FIG. **14**;

FIG. **16** is a plan view of a fourteen sided base assembly according to an example embodiment of the invention; and

FIG. **17** is an elevational view of the base assembly of FIG. **16**.

DETAILED DESCRIPTION OF THE DRAWINGS

Referring to FIGS. **1** and **5**, tower foundation **20** according to an example embodiment of the invention generally includes tower **22** and base assembly **24**. Tower **22** is generally conventional in design and can include a monopole tower such as those used to support cell phone transmission antennas, lights or wind power equipment.

Base assembly **24** is a generally basket-like or topless container structure. Base assembly **24** generally includes main pedestal support **26**, bottom trays **28**, side support panels **30**, primary support beams **32** and secondary support beams **34**. Main pedestal support **26** is centrally located and is surrounded by bottom trays **28**. In the depicted example embodiment, there are six bottom trays **28** and a generally hexagonal structure. However, this should not be considered limiting as various embodiments of the invention as depicted in FIG. **6-16** may have other polygonal structures having anywhere between six to fourteen sides. Side support panels **30** are arranged around the perimeter of bottom trays **28** and are secured to one another and are also secured to primary support beams **32** and secondary support beams **34**. Primary support beams **32** extend generally from main pedestal support **26** to side support panels **30**. Secondary support beams **34** extend generally from primary support beams **32** to side support panels **30**.

Referring particularly to FIGS. **1** and **2**, main pedestal support **26** generally includes tubular member **36**, top flange **38**, bottom flange **40** and a plurality of longitudinal gussets **42**. The number of longitudinal gussets is equal to the number of bottom trays **28**, the number of side support panels **30**, the number of primary support beams **32** and the number of second support beams **34** according to the depicted example embodiment.

Tubular member **36** is conveniently formed of a steel tube having a cylindrical or polygonal cross-section. Tubular member **36** is conveniently formed of steel tube; however it may be formed of aluminum tube or another material of sufficient strength and rigidity. If tubular member **36** is

polygonal in cross-section, it is convenient, according to an example embodiment, if the polygon has a number of sides equal to the number of longitudinal gussets **42** or multiple of the number of longitudinal gussets **42**.

Referring again to FIGS. **1**, **2** and **3**, top flange **38** is secured to tubular member **36**, for example, by welding. Tower top flange **38** presents tower fastener holes **44** located regularly therein about its perimeter. Tower fastener holes **44** are conveniently located midway between adjacent longitudinal gussets **42**. This should not be considered limited however.

Referring to FIG. **1**, according to another embodiment, top flange **38** may include tower hinge extensions **46** supporting tower hinge tabs **48**. According to the depicted embodiment, tower hinge tabs **48** are pierced by hinge holes **50**. Tower hinge tabs are spaced to accommodate tower tabs (not depicted) on tower **22**.

Bottom flange **40** is located at an opposing end of tubular member **36** from top flange **38**. Bottom flange **40** is generally perpendicular to tubular member **36** and extends radially outward therefrom.

Referring particularly to FIG. **2**, longitudinal gussets **42** are evenly spaced about tubular member **36** and extend between top flange **38** and bottom flange **40** according to the depicted embodiment. Longitudinal gussets **42** may conveniently be formed of plate or sheet steel and present upper extension portion **52**, lower extension portion **54** and middle portion **56**. Upper extension portion **52** is joined to top flange **48** for example by welding. Lower extension portion **54** is joined to bottom flange **40** for example by welding. Upper extension portion **52**, lower extension portion **54** and middle portion **56** abut tubular member **36** and may be joined thereto for example by welding. Upper extension portion **52** is pierced by primary support fastener holes **58**. In the depicted embodiment, there are two primary support fastener holes **58**. However, there may be as few as 1 or more than 2 primary support fastener holes **58**.

Lower extension portion **54** is pierced by tray fastener holes **60**. In the depicted embodiment, there are two tray fastener holes **60**, however, this should not be considered limiting as there may be as few as one or more than two tray fastener holes **60**.

Top flange **38** and bottom flange **40** may conveniently be formed of steel plate or sheet. Longitudinal gussets **42** may also be conveniently formed of steel plate or sheet though other materials may be utilized as well so long as they have sufficient rigidity and strength.

Referring particularly to FIGS. **2**, **6**, **8**, **10**, **12**, **14** and **16**, bottom trays **28** in the depicted embodiment are generally trapezoidal-shaped structures. Bottom trays **28** may be conveniently fabricated from sheet steel and steel angle, however, this should not be considered limiting as other materials may be utilized. Bottom trays **28**, according to the depicted embodiment, present inner edge **62**, outer edge **64** and side edges **66**. Inner edge **62** and outer edge **64** are generally parallel and inner edge **62** is shorter than outer edge **64**. Side edges **66** are angled relative to inner edge **62** and outer edge **64**.

Bottom trays **28** generally include base sheet **68**, inner edge angles **70**, outer edge angles **72**, side edge angles **74**, central reinforcement beam **76** and perpendicular reinforcements **78**. Inner edge angles **70** are secured to inner edge **62** of base sheet **68** for example by welding. Outer edge angles **72** are secured to outer edge **64** of base sheet **68**, for example, by welding. Side edge angles **74** are secured to side edges **66** of base sheet **68**, for example, by welding. Side edge angles **74** present adjacent panel fastener holes **80**. Side edge angles **74** are pierced by adjacent tray fastener holes **80**. Outer edge angles **72** are pierced by side panel fastener holes **82**.

Central reinforcement beam **76** extends generally radially through a center of base sheet **68** and extends from inner edge **62** to outer edge **64**. Central reinforcement beam **76** extends slightly beyond inner edge **62** and outer edge **64**. Central reinforcement beam **76** includes inner end **84** and outer end **86**. Inner end **84** is pierced by gusset fastener holes **88**. Outer end **86** is pierced by panel fastener holes **90**. Perpendicular reinforcements **78** extend in both directions between central reinforcement beam **76** and side edge angles **74**. Perpendicular reinforcements **78** are oriented generally parallel to inner edge angles **70** and outer edge angles **72** in the depicted embodiment. Central reinforcement beams **76** and perpendicular reinforcements **78** are conveniently secured to base sheet **68** for example by welding.

Referring particularly to FIG. **4**, side support panels **30** are generally rectangular in structure and include side panel plate **92**, upper angle **94**, lower angle **96**, side angles **98** and vertical reinforcement **100**. Upper angle **94** is secured to side panel plate **92** at upper edge **102**. Lower angle **96** is secured to lower edge **104** of side panel plate **92**. Side angles **98** are secured to side edges **106** of side panel plate **92**. These structures may all be secured for example by welding.

Vertical reinforcements **100** extend generally vertically between upper angle **94** and lower angle **96**.

Upper angle **94** further includes central secondary support tab **108** pierced by fastener hole **110**.

Lower angle **96** also includes corner tabs **112** pierced by fastener hole **114** and central primary support tab **116** pierced by fastener hole **118**.

Side edges **106** also include hinge barrels **120** secured to an outer portion thereof. Hinge barrels **120** are sized and structured to receive hinge barrels pins **122** therethrough. Hinge barrel pins **122** are structured to accept R clip **124** at an end thereof.

Referring particularly to FIG. **1**, primary support beams **32** generally include inner end **126**, outer end **128** and central portion **130**. Inner end **126** is pierced by gusset fastener holes **132**. Outer end **128** is pierced by lower panel fastener holes **134**. Central portion **130** is pierced by central beam fastener holes **136**.

Secondary support beams **34** generally include inner end **138** and outer end **140**. Inner end **138** is pierced by primary support fastener holes **142**. Outer end **140** is pierced by panel fastener holes **144**.

Primary support beams **32** and secondary support beams **34** may be fabricated from steel angle or other sufficiently rigid material.

In operation, tower foundation **20** is placed on a prepared area. The prepared area is leveled prior to installation for example by placement of an aggregate and leveling the aggregate prior to installation.

Main pedestal support **26** is placed centrally on the leveled prepared area. Bottom trays **28** are positioned around main pedestal support **26** with inner end **84** of central reinforcement beam **76** located adjacent to lower extension portions **54** of longitudinal gussets **52**.

Once bottom trays **28** are all located, fasteners such as bolts (not shown) may be utilized to secure inner end **84** of central reinforcement beam **76** to lower extension portions **54** of longitudinal gussets **42**. Bottom trays **28** may be secured to each other by the application of fasteners through adjacent tray fastener holes **80**. Side support panels **30** are secured to bottom trays **28** by application of fasteners through outer edge angles **72** through corner tabs **112**. Side

support panels **30** are secured to each other by aligning adjacent hinge barrels **120** and inserting hinge barrel pins **122** through hinge barrels **120**. Hinge barrel pins **122** are then secured by the application of R clips **124** at a lower end thereof. When all side support panels **30** are in place, primary support beams **32** are installed.

Primary support beams **32** are installed by coupling inner end **126** to upper extension portion **52** of longitudinal gussets **42** and outer end **128** to central primary support tab **116** at the lower edge of side support panels **30**. Secondary support beams **34** are secured at inner end **138** to central portion **130** of primary support beams **32**. Outer ends **140** of secondary support beams **34** are secured to central secondary support tab **108** of side support panels **30**. All fasteners are then secured tightened.

The interior of base assembly **24** is then filled with ballast such as soil, gravel, bricks, concrete blocks or other locally available ballast.

Tower **22** is then secured to main pedestal support **26** via top flange **38**. Tower **22** is typically secured to top flange **38** via bolts.

In the embodiment where tower hinge tabs **48** are present, tower hinge tabs **48** are secured to a base of tower **22** via similar tabs (not shown) on tower **22**. Tower **22** may then rotated from a horizontal position to a vertical position and secured by fasteners.

The present invention may be embodied in other specific forms without departing from the spirit of the essential attributes thereof therefore, the illustrated embodiments should be considered in all respects as illustrative and not restrictive, reference being made to the appended claims rather than to the foregoing description to indicate the scope of the invention.

The invention claimed is:

1. A foundation for a tower, the foundation comprising:

a main pedestal support structured to engage to a base of the tower;

a floor structure surrounding and secured to the main pedestal support, the floor structure comprises a plurality of bottom trays;

a wall structure surrounding the floor structure proximate a perimeter thereof, secured to the perimeter of the floor structure and extending upwardly from the floor structure, the wall structure including a plurality of side support panels;

wherein the main pedestal support is located generally centrally in the floor structure and the floor structure and the wall structure together form an open topped structure into which ballast may be placed;

wherein the main pedestal further comprises a tubular structure including longitudinal gussets extending vertically along a length of the tubular structure from a ton flange to a bottom flange of the main pedestal support and the longitudinal gussets extending radially outwardly from the tubular structure;

wherein each of the plurality of bottom trays further comprises a base sheet and a central reinforcement beam, the central reinforcement beam extending across and over a top of the base sheet and being structured to couple to one of the longitudinal gussets of the main pedestal support at a first end thereof and being structured to couple to one of the plurality of the side support panels at a second end thereof;

wherein each side support panel comprises hinge barrels along sides thereof, the hinge barrels being configured to rotatably engage to hinge barrels of an adjacent side panel and to receive a hinge pin therein.

2. The foundation as claimed in claim **1**, wherein the top flange is configured to engage the base of the tower.

3. The foundation as claimed in claim **1**, wherein each of the bottom trays is generally trapezoidal in shape.

4. The foundation as claimed in claim **1**, further comprising a plurality of primary support beams, each of the primary support beams being secured to the main pedestal support at a first end thereof and secured to the floor structure, the wall structure or both the floor structure and the wall structure proximate the perimeter of the floor structure.

5. The foundation as claimed in claim **4**, further comprising a plurality of secondary support beams each of the secondary support beams being secured to one of the primary support beams at a first end of the secondary support beam and to the wall structure at a second end of the secondary support beam.

6. A method of preparing a foundation for a tower structure, the method comprising:

placing a main pedestal support on a generally level surface, the main pedestal support comprising tower coupling members that are coupleable to the tower structure;

locating a plurality of bottom trays surrounding and in contact with a base of the main pedestal support;

locating a plurality side support panels at a perimeter of the bottom support trays, each of the side support panels being in contact with at least one of the bottom trays;

securing at least some of the bottom trays to the main pedestal support;

securing at least some of the side support panels to at least some of the bottom trays;

securing a tubular structure of the main pedestal support to the plurality of bottom trays via longitudinal gussets extending vertically along a length of the tubular structure from a top flange to a bottom flange of the main pedestal and radially outwardly from the tubular structure and primary support beams;

coupling each of the bottom trays to a central reinforcement beam, the central reinforcement beam extending across and over a top of the base sheet;

coupling the central reinforcement beam to the main pedestal support at a first end thereof;

coupling the reinforcement beam to one of the side support panels at a second end thereof; and

coupling each side support panel to an adjacent side support panel by engaging hinge barrels of adjacent side support panels and rotatably securing the adjacent side support panels to each other by inserting hinge pins through the hinge barrels.

7. The method as claimed in claim **6**, further comprising leveling the generally horizontal surface prior to placement of the main pedestal support.

8. A foundation for a tower, the foundation comprising:

a main pedestal support having a tower engaging portion structured to engage to a base of the tower, the main pedestal support being secured to a basket structure having a floor and perimeter walls;

wherein the basket structure is fillable with loose granular ballast and the main pedestal includes a tubular structure having longitudinal gussets extending vertically along a length of the tubular structure from a top flange to a bottom flange of the main pedestal support and radially outwardly from the tubular structure:

wherein each of a plurality of bottom trays further comprises a base sheet and a central reinforcement beam, the central reinforcement beam extending across and

over a top of the base sheet and being structured to couple to the gussets of the main pedestal support at a first end thereof and being structured to couple to a side support panel at a second end thereof; and

wherein each side support panel comprises hinge barrels along sides thereof, the hinge barrels of a first side support panel being configured to rotatably engage to the hinge barrels of a second adjacent side support panel and to receive a hinge pin therein.

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